Request for Comments

Based on previous studies and the knowledge base accumulated over time through input from States, local agencies, and professional organizations, the FHWA has identified a set of issues that may be addressed as part of this rulemaking effort. We have posed these issues as questions to elicit comments, guidance and suggestions. The FHWA believes that the magnitude of the problem under consideration and the level of concern voiced by road users requires reconsideration of how we plan, design and construct roadway projects to shift our focus to the needs of road users and businesses while balancing the need for worker safety. A customer-oriented construction project planning and implementation approach necessitates that we examine the complete project development cycle. Therefore, we have grouped the questions into categories that generally correspond to the major steps in project development. These categories are:

- General (wide-ranging policy and regulatory considerations);
- Transportation Planning and Programming;
- Project Design for Construction and Maintenance;
- Managing for Mobility and Safety In and Around Work Zones;
- Public Outreach and Communications; and
- Analyzing Work Zone Performance.

Commenters are also encouraged to include discussion of any other issues they consider relevant to this effort.

General

Note: A comprehensive work zone planning guide is needed which provides detailed information on how to consider work zones during planning, design, and field operation stages. The guide should be based on latest research and findings. This document coupled with a suite of software tools would help streamline the work zone planning/design process.

1. Should there be a National policy to promote improved mobility and safety in highway construction and maintenance? If so, should the National policy be incorporated into the regulation or issued separately as guidance that outlines guidelines and best practices for implementation?

Yes, there should be a National policy to promote improved mobility and safety in highway construction and maintenance. We would suggest that a National policy be issued separately as guidance that outlines guidelines and best practices for implementation. Regulations could follow after some time period.

2. Are the current provisions of 23 CFR 630, Subpart J adequate to meet the mobility and safety challenges of road construction and maintenance projects encountered at all stages of project evolution? If they are not adequate, what are the provisions and/or sections that need to be enhanced and/or modified to ensure mobility and safety in and around work zones?

No, the current provisions do not specifically address mobility through work zones. Also, Section 630.1006 should be modified to incorporate wording

that would address "mobility". Section 630.1010 Contents of the agency procedures (items a, b and e) should be modified.

3. Should work zone regulations be stratified to reflect varying levels and duration of risk to road users and workers, and disruptions to traffic? What would be the most appropriate stratification factors (e.g., duration, length, lanes affected, Average Daily Traffic (ADT), road classification, expected capacity reduction, potential impacts on local network and businesses)?

Yes, work zone regulations should be based on varying levels, duration of risk to road users and workers, and disruptions to traffic.

-Duration

-Length of work space

-Number of lanes being closed

-ADT

-Road classification

-Expected capacity reduction

_Potential impacts on local network and businesses

-Nighttime work

-Prevailing travel speed

-High truck volume

-Highway geometrics

-High accident location

-Commuter versus Out of State Travelers

-Design Driver

-Adverse weather conditions

-Location of work (travel lane versus shoulder)

-Active vs. inactive lane closure

4. Currently, there are several definitions for work zone, as defined by the MUTCD, ANSI D16 (proposed), NCUTLO and NHTSA. These definitions, even though similar in basic structure and implication, differ in length and the degree of detail addressed. Should there be a common National definition for work zone to bring about uniformity? If so, what should the common National definition be?

   Yes, there should be a uniform definition for a work zone. A work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or rotating/strobe lights on a vehicle to the END ROAD WORK sign or the last temporary traffic control device.

Transportation Planning and Programming

It is important to consider user mobility and safety impacts and worker safety requirements across the different stages of highway project development. Consideration of these impacts should begin early and be consistently coordinated across the planning processes and project development stages. The FHWA expects that such consideration will

reduce the need for recurrent work zones, the duration of work zones, and the disruption caused by work zones.

5. How, if at all, are impacts to road users due to road construction and maintenance part of the management and operations considerations that are addressed in transportation plan development?

Impacts to road users due to construction and maintenance part of the management and operations consideration are not typically addressed in the transportation plan development. However, this issue should be addressed by including an impact statement during the various planning and development stages.

6. To what extent should the metropolitan and statewide transportation planning processes address cross-cutting policy issues that may contribute to increases in project costs (for example, the use of more durable materials, life-cycle costing, complete closure of facilities, information sharing on utilities, etc.)? Is it appropriate to consider the impact of construction and maintenance projects to road users in planning for future roadway improvements at the metropolitan level? At the statewide level? At the corridor level?

The metropolitan and statewide transportation planning processes should address crosscutting policy issues that may contribute to increases in project costs to the extent possible. All the examples given have merit, and we would need benefit/cost analysis done to rank alternative measures. The planning should focus on both objectives, i.e., how to minimize number of

work zones, and how to improve work zone safety and mobility after the start of project planning.

It would be appropriate to consider the impact of C&M projects to road users in planning for future roadway improvements at the corridor level and adjacent roadway network where alternate routes are available for the road users.

We would need to convince the politicians that this is the best way to go, even though less money will be available to fund other projects.

7. What data and methods are currently available to address the above considerations? What else would be needed to support such considerations in the metropolitan and statewide transportation planning processes? At the corridor level?

Accident data should be available to provide an indication of potential disruptions during work operations. Volume of traffic can also provide reasonable data on probable congestion and backups. Experience of traffic engineers can also be used to provide good information. Partnerships with various groups emergency services, trucking industry and other states to help with improved mobility of goods and services along the state system, especially the major corridors.

Project Design for Construction and Maintenance

In making decisions on alternative project designs, project designers should consider different strategies and practices that may lead to reductions in the need for recurrent road construction and maintenance work, the duration of work zones and the

disruption caused by work zones. Examples of such considerations include life-cycle cost analysis, alternative project scheduling and design strategies, such as, full road closures and night time work, using more durable materials, coordinating road construction, estimation of user costs/impacts, risk and reward sharing with contractors, and constructibility reviews for projects.

8. How can the FHWA encourage agencies to incorporate the above considerations (life-cycle cost analysis, alternative project scheduling and design strategies, etc.) in the decision making process for evaluating alternative project designs? What are the most appropriate ways to include these considerations in project design?

FHWA needs to make this a requirement for states. The information related to these elements can be provided in an annual summary. The most appropriate ways to include these considerations in project design is by hiring a coordinator to keep track of these considerations and push them in projects. These considerations could be added to a checklist. Or a policy could be developed to require project designers to perform these objectives on certain roadways. Also, FHWA can provide increased funding for innovative projects.

9. Can user cost be a useful measure to assess alternative means to design and implement work zones? What weight should agencies assign to user costs as a decision making factor in the alternatives evaluation process? Should analytical tools, such as QuickZone,[1] QUEWZ-98,[2] etc., be used for the

[1] QuickZone is a traffic analysis delay estimation tool designed by the FHWA to aid State and local design and construction staff, operations and planning staff, construction contractors and even utility contractors.

evaluation of various design alternatives and their estimated impact to the public? What other impact measures (delay, speed, travel time, crashes) should agencies estimate and use for alternatives evaluation?

Yes, user costs can provide designers with a red flag for established thresholds that indicate an adverse affect on road users and traffic operations for various designs of traffic control plans. User cost should be compared to existing user costs prior to construction. If the user costs exceed 20 % of the existing user cost, this could be a flag that alternative schemes need to be looked into.

Analytical tools, such as QuickZone,[3] QUEWZ-98,[4] etc., should be used for the evaluation of various design alternatives and their estimated impact to the public. Other impact measures (delay, speed, travel time, crashes) such as truck volumes, geometrics, directional volumes, and business impacts should be used by agencies to estimate and use for alternatives evaluation.

Note: A suite of work zone analysis tools (analytical/simulation) is needed to help analysts analyze the alternatives during the planning/design stages.

This Microsoft Excel spreadsheet tool can be used to analyze both urban and inter-urban corridors. QuickZone 1.0 will soon be available. QuickZone Beta version 0.99 is available as a free download at http://ops.fhwa.dot.gov/wz/workzone.htm.

[2] QUEWZ-98 is a microcomputer analysis tool that estimates traffic impacts, emissions and additional road user costs resulting from short-term lane closures in work zones. More information about this tool may be obtained online at: http://tti.tamu.edu/researcher/v36n2/quewz98.stm.

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10. Given the fact that utility delays have been cited as roadblocks to efficient project delivery, what should be done to address this issue?

Install a utility liaison position in the state or governing agency to provide the project designers with project scheduling data that may affect governing agency's projects.

Begin utility work (if possible) at the planning/design stage.

Managing for Mobility and Safety In and Around Work Zones

There are many methods that can be applied to managing traffic in and around work zones. The application of Intelligent Transportation Systems (ITS) for purposes, such as, traffic management, automated enforcement and traveler information is a useful method to improve transportation mobility and safety. The current and future mobility and safety challenges presented by work zones may require Traffic Control Plans (TCPs) to include traffic management, enforcement and operations considerations (such as ITS based traffic control and traveler information, speed management and enforcement, incident and emergency management, etc.), security considerations, and other considerations (for example, utility location and coordination information).

11. The current regulation specifies the requirement for TCPs for work zones, but does not address the issues of sustained traffic management and operations, or traffic enforcement methods and partnerships. Should the scope of TCPs be expanded to include such considerations? What are the most relevant practices or technologies that should be considered in planning for traffic management, enforcement and operations? What are the most appropriate

[4] QUEWZ-98 is a microcomputer analysis tool that estimates traffic impacts, emissions and additional road user costs resulting from short-term lane closures in work zones. More information about this tool may be

ways to facilitate the inclusion of such considerations in traffic control planning?

The scope of the TCP should encourage and include the above issues. The new Quick Zone software should be utilized to enhance the planning of traffic flow through work zones. Experience or training should be the best way to see that these things are considered in the planning process. A checklist should be provided to assure consideration of these concerns.

12. Should TCPs address the security aspects of construction of critical transportation infrastructure? Should TCPs address the security aspects of work zone activities in the vicinity of critical transportation or other critical infrastructure?

Yes, to the extent possible. It is difficult to achieve mobility and security simultaneously. Concrete barrier should be used be around column structures. Ingress and egress security for the construction sites may present a problem. Other than basic security, this will be difficult to provide. Basic security may entail a watchman. The bottom line is that the cost to provide reasonable security will not be cheap.

13. How should TCPs address ADA requirements?

A standard drawing can be developed to show the requirements for ADA. Also, verbiage needs to be included in the specification book to address

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obtained online at: http://tti.tamu.edu/researcher/v36n2/quewz98.stm.

ADA's needs. A check off box in the contract document may be needed to alert others that the needs of ADA have been addressed for the project.

14. Should more flexibility be allowed on who develops TCPs – State DOTs, municipalities, contractors or law enforcement agencies – and how should the responsibility for developing TCPs be assigned? Should certification be required for TCP developers? How can the owners and contractors share the roles, risk and rewards in developing TCPs and implementing and operating work zones?

    The states should develop the traffic control plan. The contractors should have the option to modify the TCP or develop his own with the approval of the contracting agency. Initially, training should be provided for those responsible for designing a traffic control plan. Certification should follow the implementation and requirement for training by two or three years. Owners and contractors can share the roles for all of these elements by working together. A team of retired volunteer contractors could be formed to review several (major) traffic control plans for the governing agency. Law enforcement agencies should be a part of the process too. Also, contractors/traffic managers should be monetarily rewarded for safe work places for motorists, worker/pedestrians and bicyclists. A basic bonus could be offered with a chance to increase the bonus by some clever means.

15. To ensure roadway mobility and safety and work area safety, should mobility and safety audits be required for work zones?

On an as needed basis, if determined by FHWA, that the governing agency does not have an adequate plan to address these concerns.

Public Outreach and Communications

To reduce the anxiety and frustration of the public, it is important to sustain effective communications and outreach with the public regarding road construction and maintenance activity, and the potential impacts of the activities. This also increases the public's awareness of such activities and their impacts on their lives. The lack of information is often cited as a key cause of frustration for the traveling public. Therefore, it is important to identify the key issues that need to be considered from a public outreach and information perspective.

Note:

(1) Maintenance projects may be a little more difficult to show unless they are long-term maintenance projects. We need to convince the T. V. stations to provide more coverage of this type of information. A partnership could be developed between the state agency and major television networks.

(2) Safety messages should be added to all governing agencies fleet vehicles as part of a public relations safety campaign to spread the work zone safety message.

16. How can we better communicate the anticipated work zone impacts and the associated mitigation measures to the public? Who – the State, local government, contractor, or other agency – should be responsible for informing the public?

We can better communicate this message to the public by providing this type of information to the public through television and radio medias. T. V. stations should show construction project locations with other traffic information on a weekly basis as well as this same information on their WEB pages. Estimated delay information at select times of the day may be added to newspapers and WEB pages to provide the motorist with decision-making information. A disclaimer statement may be needed to advise the public that this information is subject to change at any time. More construction site locations (State Routes) can perhaps be shown on the WEB pages, than in the newspapers.

The use of ITS in work zones can provide estimates of delays, queues, speeds, travel times, etc which can then be displayed on DMSs/Internet in real-time. This information can also be provided to all media sources.

17. Should projects with substantial disruption include a public communication plan in the project development process? If so, what should such a plan contain?

Yes, a public communication plan or public relations outreach campaign plan should be included in the project development process. The plan should contain a map of the roadway network showing the limits of construction, alternate travel routes, detour routes, work hours, daily lane restrictions, estimated travel time/delay, and expected queue lengths at select times

during the day. This information should be provided to the print media on a weekly basis, and on the Internet as well.

Analyzing Work Zone Performance

Evaluation is a necessary tool for analyzing failures and identifying successes in work zone operations. Work zone performance monitoring and reporting at a nationwide level has the potential to increase the knowledge base on work zones and help better plan, design and implement road construction and maintenance projects.

18. Should States and local transportation agencies report statistics on the characteristics of work zones (such as number of work zones, size, cost, duration, lanes affected, ADT, road classification, level of disruption and impacts on local network and businesses) to appropriate State or Federal agencies? If so, in what ways do you think this would be beneficial?

Without accident data to support data on the characteristics of work zones the above information may be useless. This could be a time consuming process for agencies with employee cutbacks. You may want to collect this data only on urban freeways/expressways, and restrict it to construction projects only.

19. Should states and local transportation agencies report statistics on the mobility performance of work zones? Are typical mobility measures, such as, delay, travel time, traffic volumes, speed and queue lengths appropriate to analyze work zone mobility performance? What are the top three measures that are most appropriate?

Yes, states and local transportation agencies should report on the mobility performance of work zones in an effort to minimize delays to the motorists and driver frustration. Yes, delay, travel time, traffic volumes, speed and queue lengths are appropriate to analyze work zone mobility performance. This data could be collected at various times after introducing a new phase of construction. The top three measures would be travel times/delays, queue lengths, and traffic volumes.

20. Are the currently used measures for safety (typically, crashes, fatalities and injuries) appropriate to analyze work zone performance? If not, what other measures should be considered? Are current mechanisms for collecting this information adequate? If not, how can we improve them?

No, other measures of safety such as erratic maneuvers and conflict maneuvers should also be used to analyze traffic flow through work zones. Training may be necessary to collect this type of information and interpret it correctly. There may be reluctance on the contractor to make changes to the traffic control setup.

FHWA should encourage and sponsor test deployments of potential devices/techniques to gather this data.